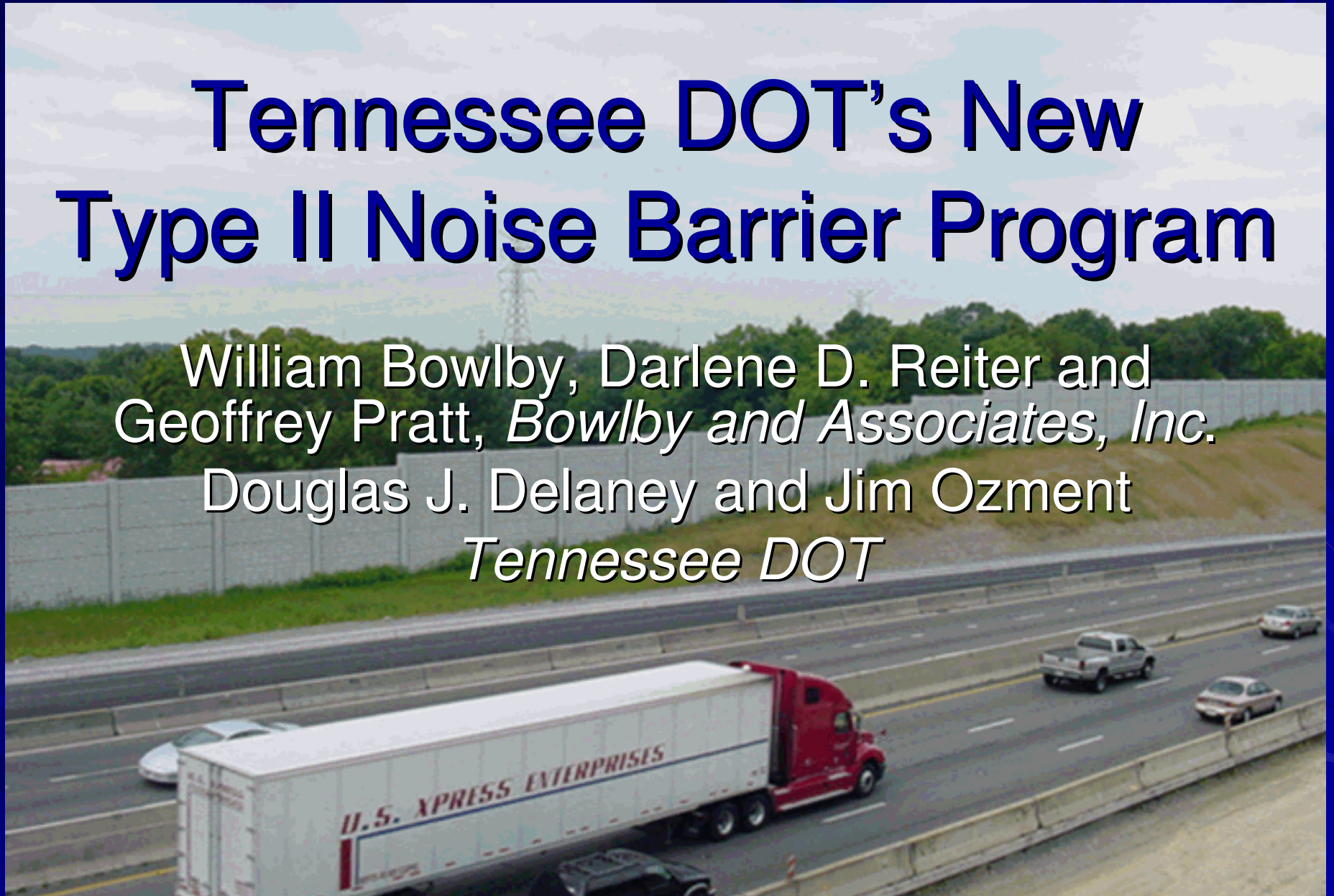


Tennessee DOT's New Type II Noise Barrier Program

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Introduction

- TDOT Commissioner and staff are committed to working with the public
- Was a need to address long-standing concerns of neighborhood groups for noise barriers on existing highways
- Ability to use Federal-aid funding (80% of total cost) was essential

23 CFR 772: “Type II Projects” are Optional

- Federal or Federal-aid highway project *solely for noise abatement* on an existing highway
- TDOT has *not* had a Type II program and has *not* yet built any Type II barriers



To qualify for Federal-aid, neighborhood must ...

- ...pre-date *initial* highway construction
- ...not have been previously rejected for a “Type I” barrier (new highway construction or through-lane widening)

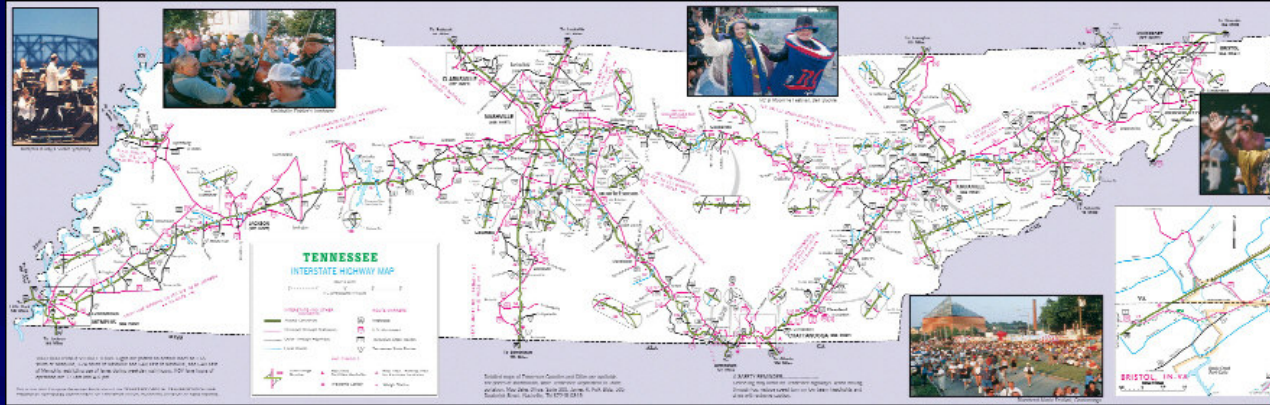
Phases of TDOT Study

- Statewide Type II Noise Barrier Needs Assessment Study
- Type II Noise Barrier Prioritization Study
- Type II Noise Barrier Program

Statewide Type II Noise Barrier Needs Assessment Study

- 2003-2004
- Goal: Order-of-magnitude program cost

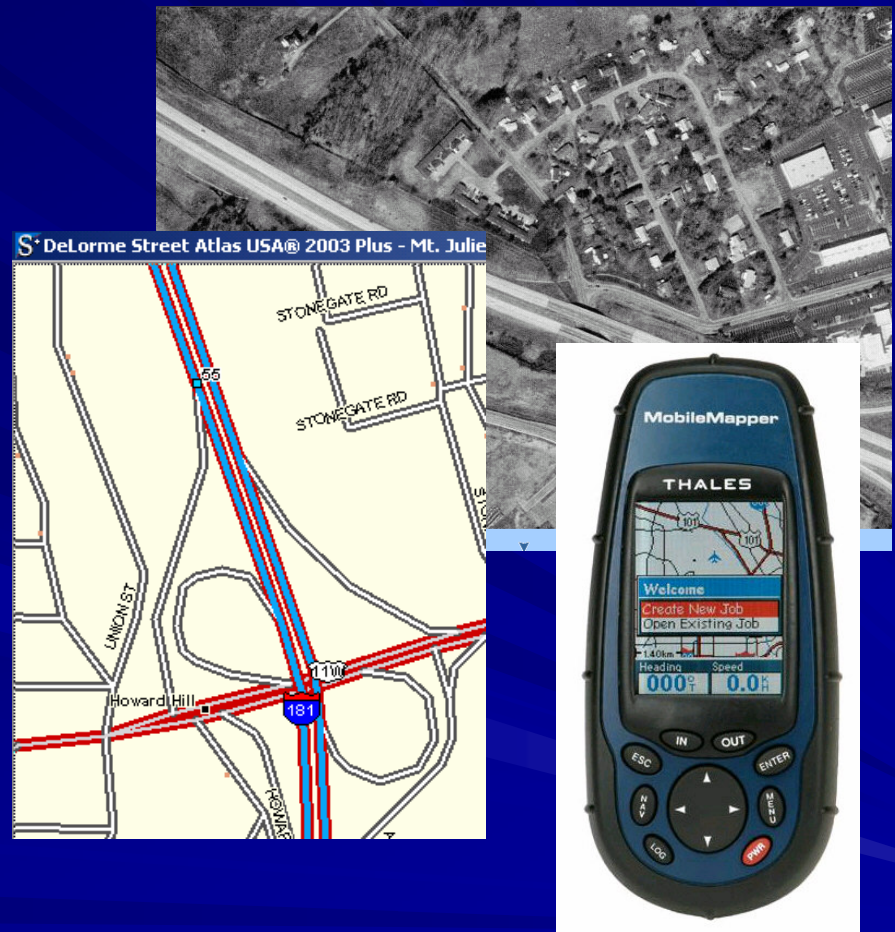
Statewide Needs Assessment



- Identify planned widenings that would require Type I studies
- Limited access highways across state
- Rule out previous Type I project areas where barriers were studied and found to be “not reasonable”

Statewide Needs Assessment

- Locate residential development along roads sections
 - Electronic mapping
 - Web-based aerial photos
 - “Windshield” field review with GPS



Statewide Needs Assessment

- Residential development date analysis: Did any of the development predate initial highway construction?

Tennessee Property Data - Parcel Detail - Netscape

File Edit View Go Bookmarks Tools Window Help

http://170.142.31.248/ParcelDetail3.asp

Bookmarks B&A Goo Wthr NCD Metro talk Montana TNA Maps,travel TNM

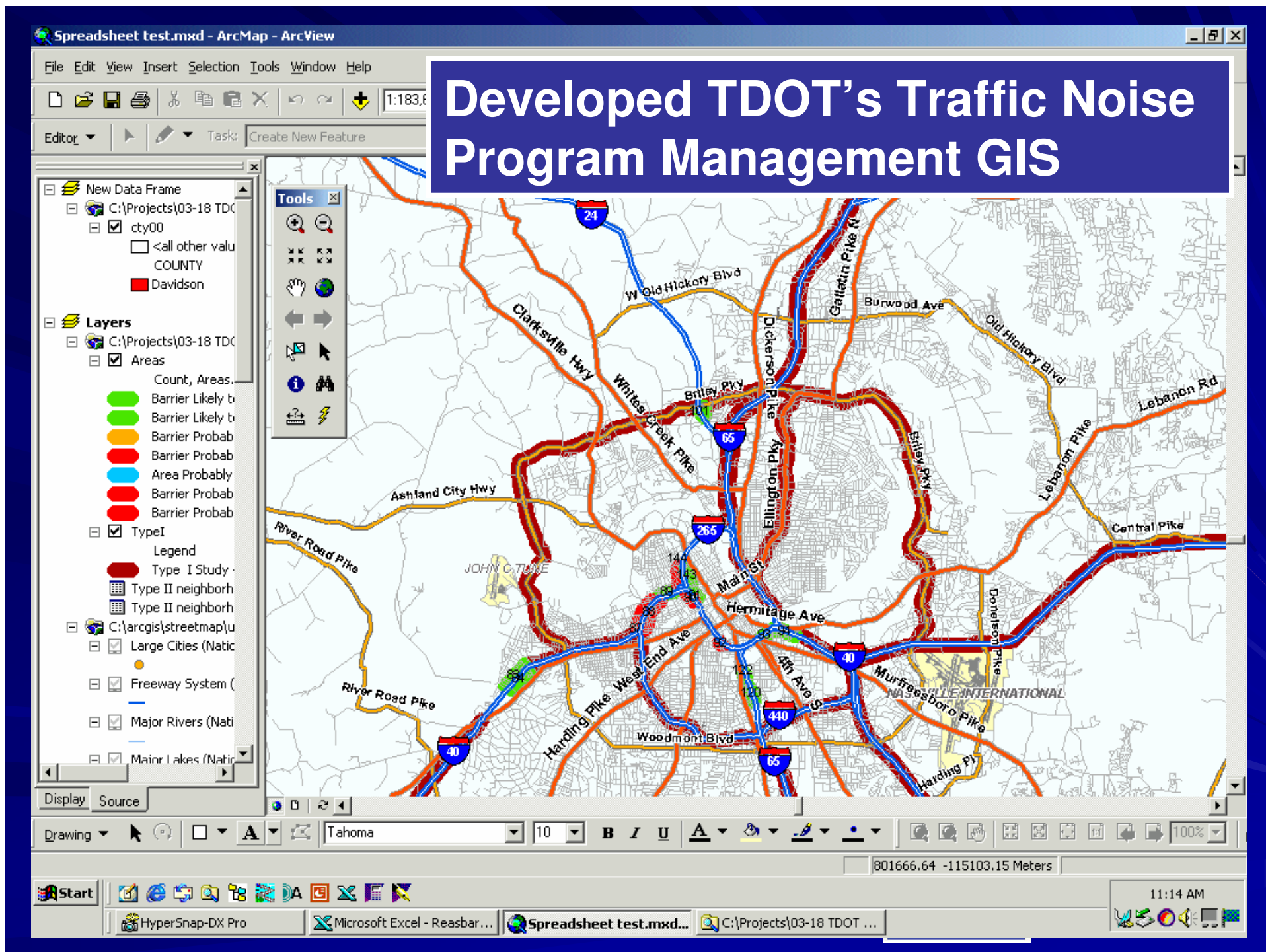
County Number: 094 County Name: WILLIAMSON

Property Owner and Maili	Heat and A/C:	07 - HEAT & COOLING SPLIT
Jan 1 Owner: BOWLBY WILLIAM ETUX PATRICIA W 6403 WATERFORD DR BRENTWOOD , TN 37027	Bath Tile:	04 - FLOOR-1/2 WALL
Property Location	Shape:	01 - RECTANGULAR DESIGN
Address: WATERFORD DR 6403	Act Yr Built:	1988

Statewide Needs Assessment

- Through simplified modeling
 - Is the residential area impacted?
 - Is a barrier feasible?
 - Would barrier cost be “reasonable”?
 - Allowable cost per benefitted residence of \$34,000 (revised TDOT Traffic Noise Policy)

Developed TDOT's Traffic Noise Program Management GIS



Identify Results

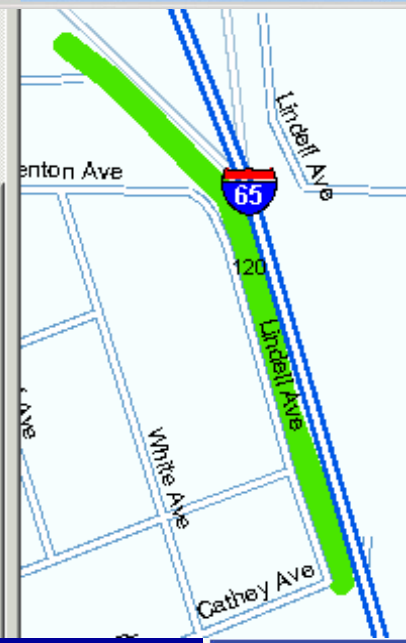
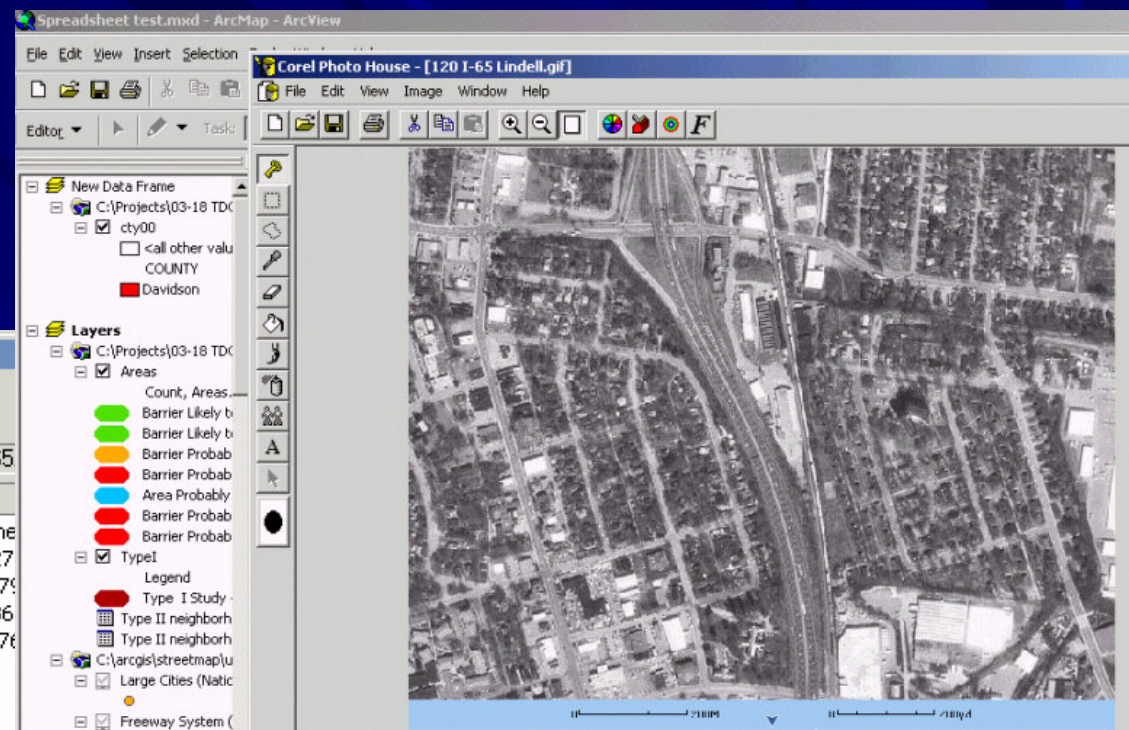
Layers: <Top-most layer>

Areas

Mixed

Location: [821523.104576 -113465]

Field	Value
Areas.HWY_CONSTR	1972, Lane
Areas.LAT_BEGIN	36.128027
Areas.LON_BEGIN	-86.773779
Areas.LAT_END	36.133886
Areas.LON_END	-86.776076
Areas.NO_1ST_ROW	28
Areas.DU_DENSITY	Dense
Areas.TYPE_DU	SF, MF
Areas.OTHER_CATB	No
Areas.INI_CONSTR	1972
Areas.INIT_LANES	2
Areas.WIDE_LANES	3
Areas.DIST_TO_CL	150
Areas.X_ST_BEGIN	Cathey
Areas.X_ST_END	Wedgewood
Areas.NOTES	
Areas.TYPE_I_DET	Yes
Areas.TIP	
Areas.IMPACTED	Yes
Areas.FEASIBLE	Yes
Areas.REASONABLE	Yes
Areas.LRP	2015
Areas.STAUS	Barrier Likely to be Reasonable and Feasible
Areas.Image	Photos\120 I-65 Lindell.gif
Area	120
Criterion	34000
FS Cost	20
ST Cost	50
Barr Ht	15
# Front Row	27
#2nd Row	15



Statewide Needs Assessment Results

Analysis Areas (excluding Type I)	212
<i>minus TIP</i>	24
<i>minus Post-dated highway</i>	68
Pre-dated highway (eligible for consideration)	120
<i>minus Not impacted</i>	10
<i>minus Not feasible</i>	5
<i>minus Not reasonable</i>	69
Qualified (impacted, feasible, reasonable)	36

Statewide Needs Assessment Results

- Total “order of magnitude” cost is \$32 million
- Many areas “on the bubble” (between \$34,000 and \$37,000 per benefitted residence)
- Many Long-Range Plan projects adjacent to eligible areas
- ***TDOT’s Commissioner decided to initiate Type II Program***

Type II Noise Barrier Prioritization Study

■ 2004-2005

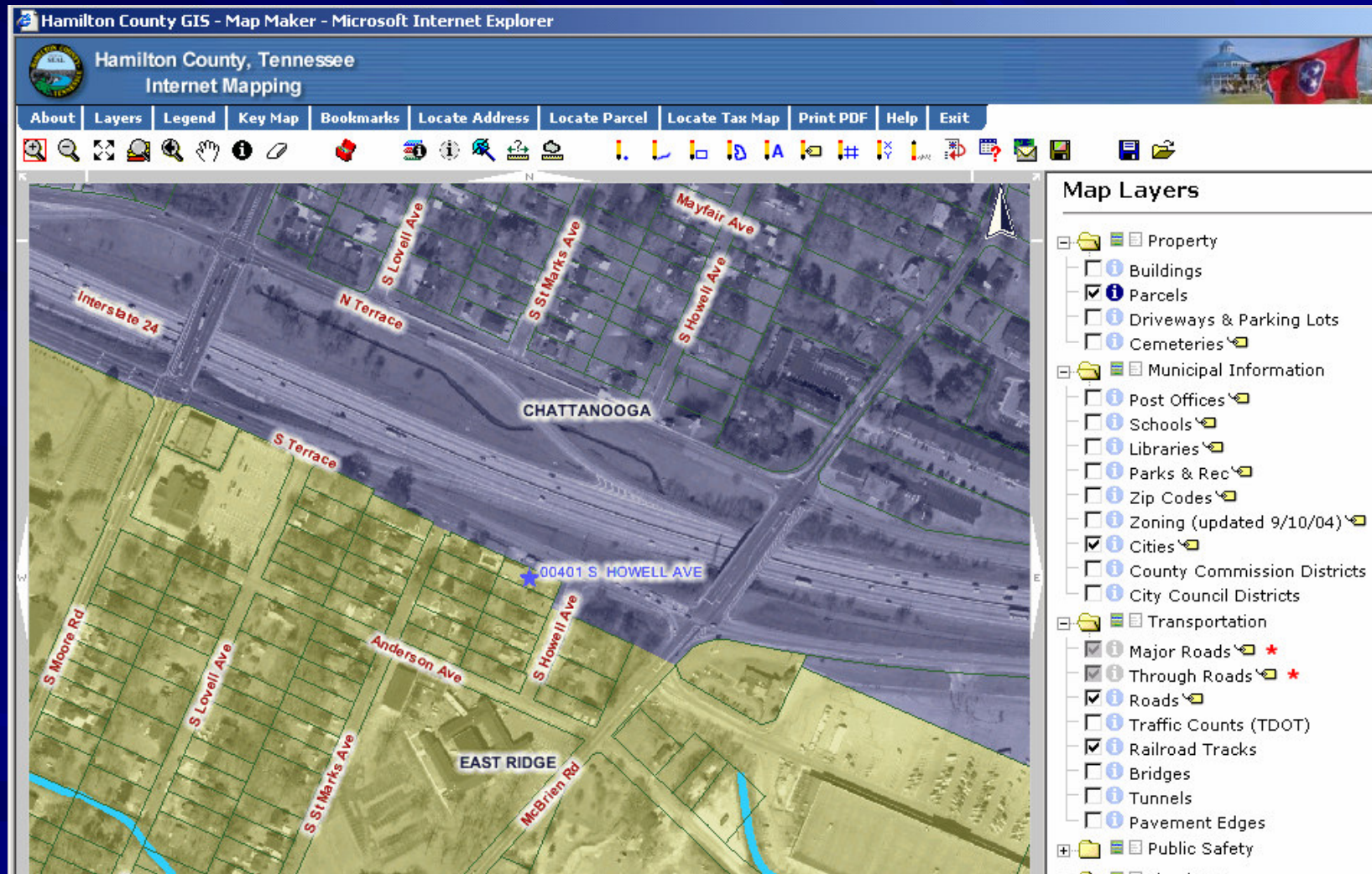
■ Goals:

- Detailed analysis to identify and prioritize qualified areas
- Development of a Public Response Plan

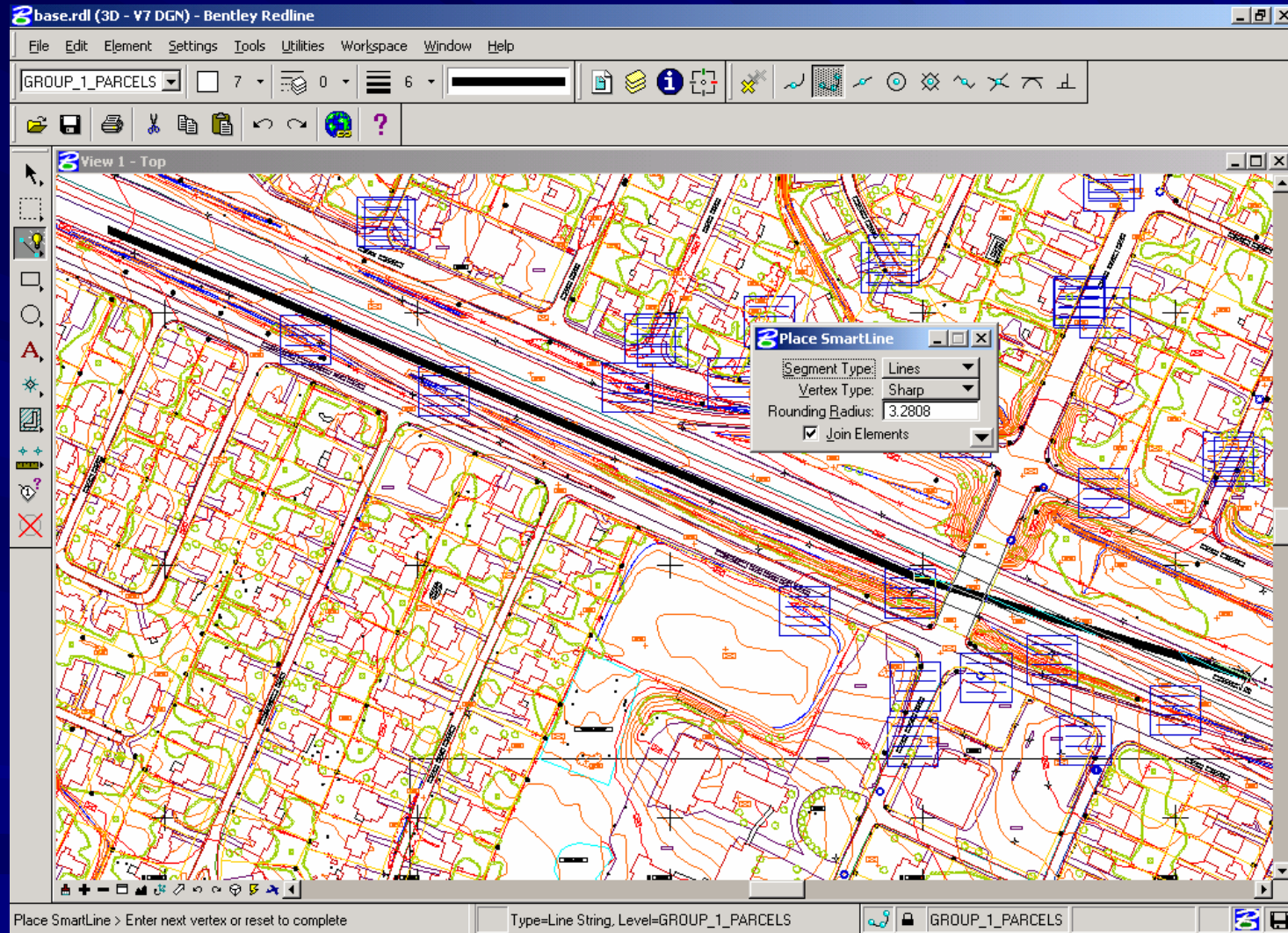
Type II Noise Barrier Prioritization Analysis

- Residential development date verification (majority of residences in first two rows must pre-date initial road)
- Noise impact verification / noise measurements
- Site-specific TNM noise modeling
- Updating of TDOT Noise Management GIS

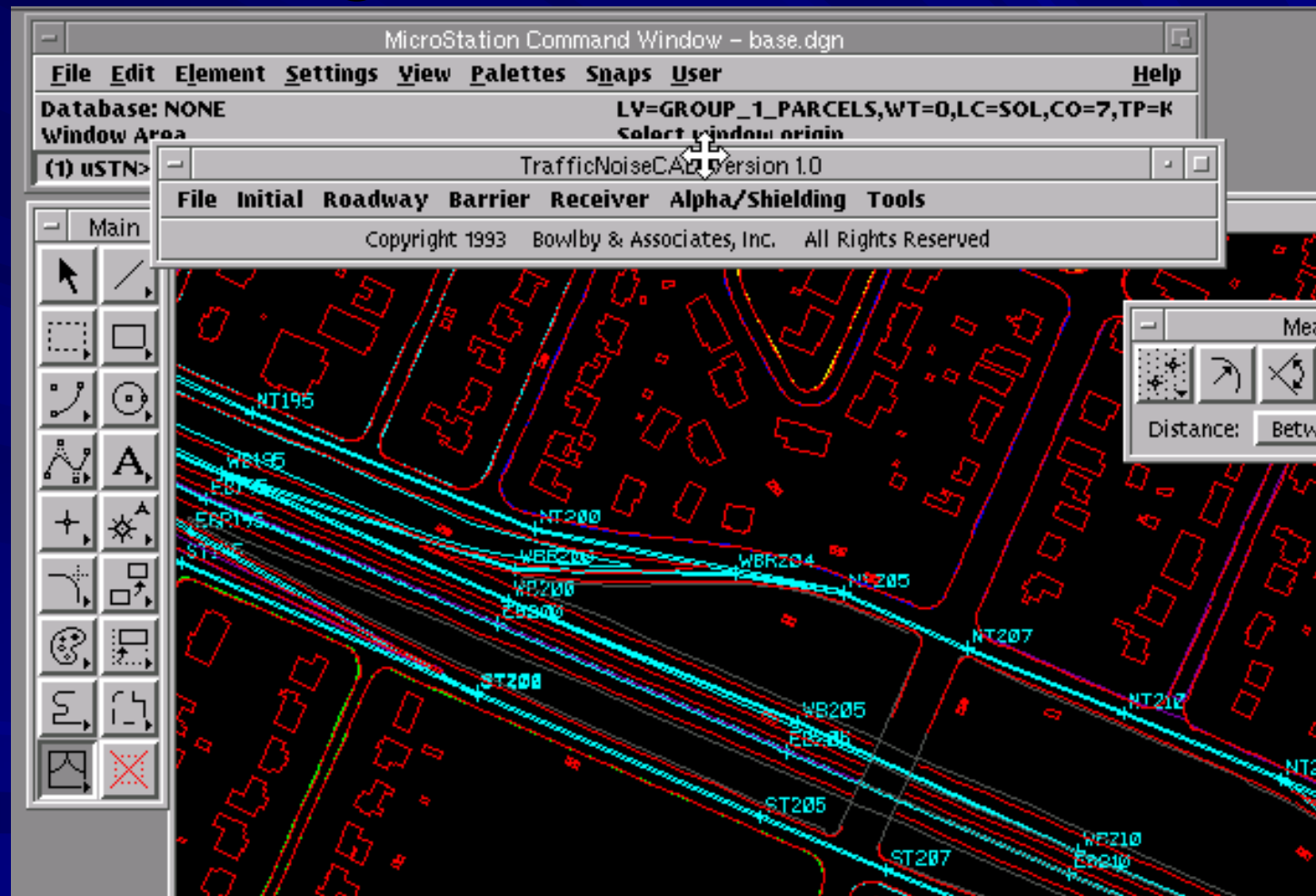
Ownership and Build-Date Information



Use County GIS DXF Files for TNM



Use TrafficNoiseCAD in MicroStation to Digitize TNM Features



Type II Prioritization Study Results

Analysis Areas	159
<i>minus Post-dated highway</i>	72
Pre-dated highway (eligible for consideration)	87
<i>minus Not feasible</i>	5
<i>minus Not eligible land use</i>	5
<i>minus Low density</i>	19
Areas where measurements conducted	58
<i>minus Not impacted</i>	14
Detailed TNM Modeling	44
<i>minus Not reasonable</i>	23
Qualified (impacted, feasible, reasonable)	21

Development and Analysis of Prioritization Methods

- Contact other state DOTs and gather data on prioritization methods
- Develop several alternative prioritization methods for TDOT
- Apply methods to the qualified areas

Important Factors

- First-row sound level
- Number of first-row impacts
- Number of non-first-row benefits
- Cost per benefitted residence
- Total cost

Prioritization Methods

- Simple rankings by individual factors
 - First-row sound level
 - Number of first-row impacts
 - Cost per benefitted residence

- *Cumulative*: Average the above rankings and rank the averages (e.g., ranks of 1, 2 and 4 for a site would mean an average rank of $(1+2+4)/3 = 2.33$)

Prioritization Methods

■ *Method A*

(First-row sound level – 65 dB)
x (Number of first-row impacts)
/ (**Cost per benefitted residence**)

■ *Method B*

(First-row sound level – 65 dB)
x (Number of first-row impacts)
/ (**Cost**)

Prioritization Methods

■ *Method C*

(First-row sound level – 65 dB)

x [(Number of first-row impacts) + 2/3 (Number
of non-first-row benefits)]

/ (Cost per benefitted residence)

■ *Method D*

(First-row sound level – 65 dB)

x [(Number of first-row impacts) + 2/3 (Number
of non-first-row benefits)] / (Cost)

Results of Prioritization Analysis

- Three of qualified areas were ranked 1, 2, 3 or 4 by Cumulative Ranking and Methods A-D
- Beyond “top 3” areas, use of “cost” vs. “cost per benefitted residence” resulted in different rankings

TDOT's Plan

- Select “top 3” areas for pilot program
 - Total cost fell within range of Commissioner’s goal of \$3 million for first year
- Do not publish a single “list” of rankings
- Instead, use results to develop several cost-constrained, multi-year implementation plans

Need for Public Response Plan

- Hundreds of residential groupings along limited access roadway system, not including previously studied Type I areas
- Only 21 in final group of qualifying Type II areas
- Need to be prepared to respond quickly and uniformly to inquiries from the public and public officials

Public Response Plan

■ Development of:

- Figures showing location of each residential area adjacent to a limited access roadway
- Tables listing reason(s) area was either eliminated or included in Type II program
- Set of standardized response letters

■ Figures and tables printed and placed in binders, plus information in the GIS

For Immediate Release
March 4, 2005



TDOT Announces New Noise Barrier Policy and Program

Program allows for new noise walls in established neighborhoods

Nashville, Tenn.—The Tennessee Department of Transportation (TDOT) today announced the details of a new noise barrier policy along with the details of a new Type II Noise Barrier Program that will provide noise walls for the first time in qualifying neighborhoods.

"This is an exciting new program that will allow for the construction of noise walls in qualifying, older neighborhoods that were established before high volume roadways were built," said Governor Phil Bredesen. "This is something many people have requested in Tennessee's urban areas and I believe it will help improve the quality of life for people living near high noise level roadways."



Type II Pilot Program

- First Year Program funded at \$3 million for three pilot projects in 2005-2006
- Similar funding level anticipated for future years (total of \$25 million)



I-55 NB Memphis

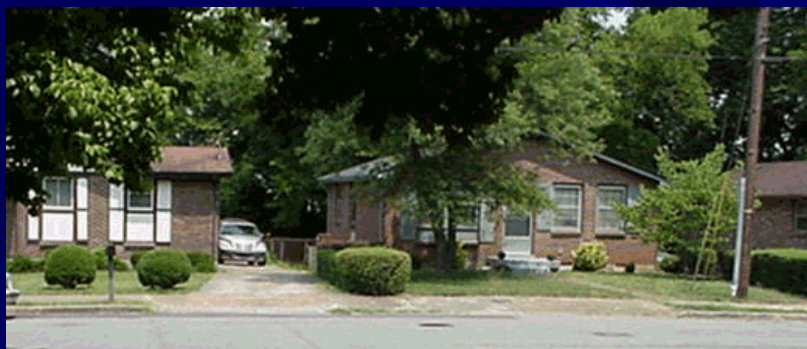


<i>Area</i>	<i>14</i>
County	Shelby
Barrier Length (ft)	4,600
Average Height (ft)	12
Cost	\$1,380,300
<u>Benefitted Residences</u>	185
Cost per <u>Benefitted Residence</u>	\$7,461
Reasonable?	Yes

I-40 EB Nashville

<i>Area</i>	<i>93</i>
County	Davidson
Barrier Length (ft)	2,613
Average Height (ft)	14
Cost	\$954,000
Benefitted Residences	90
Cost per Benefitted Residence	\$10,600
Reasonable?	Yes





I-65 SB Nashville



<i>Area</i>	<i>120</i>
County	Davidson
Barrier Length (ft)	2,631
Average Height (ft)	13
Cost	\$880,850
Benefitted Residences	83
Cost per Benefitted Residence	\$10,613
Reasonable?	Yes

What's Next?

- Type II noise barrier needs and cost assessment for Type I barriers previously found “not reasonable” (100% State funds)
- Quieter pavements assessment / testing
- Public officials outreach/education on noise-compatible land use planning development

Acknowledgments to Tennessee DOT and the Federal Highway Administration for funding and assistance with this study





Questions?



Type II/Type I Needs and Cost Assessment

- “Type One-and-a-Half”
- Barriers judged unreasonable for previously studied Type I areas might now be reasonable under new TDOT Traffic Noise Policy
- Would have to be constructed with 100% State funds since they do not qualify for Federal-aid funding

Will Include Quieter Pavements Assessment

- May not be possible to provide noise barriers without Federal-aid funding
- Investigate installing “quieter” pavements on roads adjacent to these neighborhoods
- May be possible to incorporate into normal pavement maintenance schedule

Plans to Test Two Pavements

- Open-Graded Asphalt Overlay
- NOVA Chip
- Route 840 east of Nashville
- Two six-mile sections
- Before and after noise measurements in 2005 (late summer/fall)

Public Officials Outreach / Education

- “Carrot and stick” of new TDOT Traffic Noise Policy regarding undeveloped lands
- “Stick”:
 - If a local government allows residential development along existing highway after the new policy...
 - ...TDOT will not provide abatement if it widens the road

“Carrot”: Outreach and Education

- Presentations at Metropolitan Planning Organization meetings on new policy and noise-compatible land use planning development
- Booth at upcoming Tennessee Chapter of American Planning Association conference
- New policy brochure
- Web-site information
- Workshops and possible “toolkit” on noise-compatible planning and development

Summary

- TDOT concerned about noise impacts on neighborhoods pre-dating roads
- TDOT Commissioner decided to implement a Type II program
- Three pilot projects are now underway
- TDOT will assess costs of reconsidering older “not reasonable” Type I decisions
- TDOT will investigate quieter pavements
- TDOT will encourage noise-compatible planning and development